

# Alcohol misuse in patients attending a defence force general medical clinic

Bekker D, MBChB, MFamMed

Van Velden DP, MBChB, MPraxMed

Department of Family Medicine, University of Stellenbosch

Correspondence: Dr D Bekker, 3 Grobler Street, Aurora Durbanville, 7550

Tel: 021-5902635, e-mail: jii00729@mvweb.co.za

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## Abstract

- Aim:** To determine the prevalence of alcohol misuse in adult patients attending a defence force general practice clinic.
- Design:** Descriptive cross-sectional survey.
- Methods:** The setting is a military sickbay situated in the Cape Town metropolitan area, South Africa. Participants included all adult patients ( $\geq 18$  years) attending the clinic during a three week period midyear. The Alcohol Use Disorders Identification Test (AUDIT) questionnaire was completed by patients. Two direct alcohol consumption questions were added determining the total drinks per week as well as the maximum number of drinks per occasion.
- Results:** Of the 658 patients approached, 40 (6%) declined to fill in the questionnaire. 42% of the 618 patients surveyed were female and 58% were male with an average age of 41 years. The group consisted of 44% current defence force members, 25% retired defence force members, 22% medical dependents and 7% civilians. The overall rate of alcohol misuse according to the AUDIT-questionnaire was 13,27%. Among male patients, 20,6% scored as misusers of alcohol, compared with 2,7% among females. A much higher level of misuse was also found under younger age groups. 38,1% of male apprentices at the technical college and 40,0% of male current defence force members staying on the base scored 8 or more on the AUDIT. In the group scoring less than 8 on the AUDIT-questionnaire a further 9 patients reported drinking on average more than 14 drinks per week for males and more than 9 drinks per week for females. In this group (AUDIT-score  $< 8$ ) 76 patients reported maximum number of drinks per occasion of more than 4 for men and more than 3 for women. If these two questions are included the overall rate of alcohol misuse found was 26,05%.
- Conclusion:** The high rate of alcohol misuse found in this group of patients is need for concern. The overall rate of alcohol misuse was not found to be higher than what was found in other studies in South Africa as well as other countries. This study supports the implementation of screening and intervention strategies in general medical clinics in the defence force.

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## INTRODUCTION

Alcohol misuse may come to be recognized as one of the most significant public health concerns facing South Africa over the next few years. This is a direct result of alcohol's impact on the health services, the economy, and the South African society as a whole.<sup>1</sup>

Alcohol misuse is common world-wide and in South Africa there is an estimated prevalence of 10% of alcohol

dependence in the adult population.<sup>2</sup> However, relatively few studies have been published on drinking patterns in South Africa. With regards to adults, epidemiological studies in recent years have also focussed almost entirely on the black and coloured population while they are not the only groups who have high levels of risky drinking.<sup>1</sup>

There has always been a perception that a high prevalence of alcohol misuse exists amidst defence force patients, but

the only study found pertaining to military personnel looked at the pattern of drug-taking of 188 drug-dependent national servicemen seen in the department of psychiatry of 1 Military Hospital in Pretoria in the year 1971. Alcohol were used by only 18% of the subjects.<sup>3</sup> In our study practice we are not aware of many alcohol dependent patients. According to the social work department, they have detected a high prevalence of alcohol misuse especially

under the younger uniformed members (age 18-25) who are busy with their apprenticeship at the military technical college, but no effort has been made in our practice to screen or treat for alcohol misuse as part of an organised health promotion plan.

Several studies have shown that doctors fail to detect alcohol misuse in the majority of their patients. They are particularly unlikely to identify misuse in its earlier stages and therefore miss major opportunities for intervening.<sup>4-17</sup> Research has established the effectiveness of even brief interventions by primary care physicians on patients with hazardous and harmful alcohol consumption.<sup>18-25</sup>

New evidence continues to appear appertaining to levels and patterns of alcohol use in relation to health effects, social well-being, and economic costs. Data from several recent large prospective studies suggest that alcohol consumption in quantities consistent with hazardous and harmful drinking may increase the risk of adverse health events, such as haemorrhagic stroke and breast cancer.<sup>26-28</sup>

Every effort should thus be made in primary care settings to detect and treat alcohol misuse in its earlier stages (heavy, hazardous and harmful drinking) because it is more common and probably more responsive to treatment than alcohol abuse or dependence.

By looking at the prevalence and pattern of alcohol misuse in patients attending our clinic we aimed to determine the size and distribution of the problem to enable us to motivate for and do proper planning towards intervention as part of health promotion.

## METHODS

A descriptive, cross-sectional survey design was used. The study setting was Wingfield Military Sickbay situated at Goodwood, one of the northern suburbs of Cape Town. Participants in the study included all adult patients ( $\geq 18$  years) attending the general medical clinic for a period of three weeks (28 June to 18 July 2000). We aimed at a minimum sample size of 340-350 for validity purposes. The patient population served by the clinic was estimated at more than 11000.

The Alcohol Use Disorders Identification Test (AUDIT) questionnaire<sup>29-34</sup> was given for self-completion to patients during normal clinic hours (07h30 - 16h00). Questions additional to those posed in the questionnaire were added with regards to personal information as well as alcohol consumption to determine the prevalence of at-risk drinking.

It has been demonstrated that direct questions about average daily consumption or frequency of heavy consumption are less sensitive than standard self-report screening questionnaires in detecting alcohol misuse. Biochemical markers, especially serum gamma glutamyl transferase can assist in identifying problem drinking but are also less valid than self-report measures. In detecting alcohol dependence or abuse, the most widely used instruments are the CAGE<sup>29-34</sup> with 4 items and the Michigan Alcoholism Screening Test (MAST)<sup>29-34</sup> with 25 questions. They have proven to be useful screening instruments and have revealed a higher validity compared to laboratory data. They are however insensitive for hazardous or heavy drinking. The Alcohol Use Disorder Identification Test (AUDIT) was developed by the World Health Organisation in an international multi-site trial<sup>29</sup> in an attempt to also detect earlier stages of drinking which place the patient at risk for suffering eventual severe alcohol related problems. The authors gave particular attention to selecting items generalisable across culture, gender and age. Most of the AUDIT questions inquire about the previous year rather than ever in the patient's lifetime, thereby decreasing errors of mislabeling individuals who have already resolved earlier problems with alcohol. Questions on the AUDIT covers the three domains of consumption, alcohol dependence and adverse consequences of drinking.<sup>29-34</sup>

At a cut-off value of 8 of the possible 40 points on the test, sensitivity and specificity coefficients are high. Saunders *et al* reported a 92% sensitivity and 94% specificity for hazardous and harmful drinking and a 100% sensitivity for alcohol dependence.<sup>29</sup> Isaacson *et al* found sensitivity and specificity of 96% in the detection of alcohol abuse and dependence

compared to the Structured Clinical Interview for DSM-III-R (used as the "gold standard" for alcohol abuse or dependence).<sup>9</sup>

Results of the AUDIT have also been associated with more distal indicators of problematic drinking. It was found to be a good predictor of both alcohol-related social and medical problems.<sup>31,35-36</sup> The AUDIT questionnaire is currently the only validated instrument designed to detect hazardous drinking.

**Hazardous drinking** is defined as a quantity or pattern of alcohol consumption that places individuals at risk for adverse health events and is recognised by the World Health Organisation (WHO) as a distinct disorder. The quantity or pattern of alcohol consumption that constitutes hazardous drinking is typically specified by setting threshold values for an individual's average number of drinks consumed per week or per occasion.<sup>26</sup>

**Heavy drinking** is defined as a quantity of alcohol consumption that exceeds an established threshold value.<sup>26</sup> The Addiction Research Foundation of Ontario and Canadian Centre on Substance Abuse adopted threshold levels of more than 14 drinks per week for men and more than 9 drinks per week for women based on current scientific evidence.<sup>27</sup> Individuals whose drinking exceeds these guidelines are thought to be at increased risk for adverse health events. The definitions of hazardous and heavy drinking are thus similar. However, the threshold levels set for hazardous drinking in developing the AUDIT were an average daily consumption of 60g per day (6 drinks) for men and 40g (4 drinks) for women.<sup>29</sup> If a male were to drink 3 units of alcohol per day for 7 days a week and have no adverse consequences of drinking or signs of dependence, he may, depending on the rest of his answers on the AUDIT questionnaire, score only 5 points. Although women suffer from adverse consequences of drinking at lower levels of consumption than men, the AUDIT like other validated questionnaires, does not use a separate scoring system based on gender.<sup>37</sup> A woman who drinks 2 drinks per day would by definition and current evidence on high risk drinking be

considered a hazardous or heavy drinker, but may score only 4 on the AUDIT. It has therefore been decided to add 2 questions on consumption which follows after the AUDIT, determining the total drinks per week as well as the highest total of drinks per occasion. Many studies define heavier drinking episodes as occasions on which more than 4 drinks were consumed. The National Institute of Alcohol Abuse and Alcoholism (USA) sets this threshold at >4 drinks for men and >3 drinks for women. However, there is no strong evidence favouring any specific amount as marking a discrete threshold of risk.<sup>26,27</sup>

To ensure that confidentiality about the identity of the patients were preserved, questionnaires were completed anonymously and no code were kept of the identities of patients. After completion, the questionnaire were deposited by the patient in a visibly locked wooden box. The scoring system were not indicated on the questionnaire.

Due to the diversity of home languages in the defence force it was decided to present the questionnaire in English seeing that it is the language mastered by the majority of the patients.

A research assistant was appointed and trained to distribute the questionnaires to the patients in the waiting room. This person was available full-time to assist with any problems that might arise in completing the questionnaire.

Before finalisation, the questionnaire was first piloted on 6 patients.

Descriptive statistics were determined. Within the samples comparisons were made with respect to groups formed by gender, race, occupation etc. Contingency tables were used to investigate the influence of discrete classificatory factors. Percentages out of a total less than 20 were calculated only for comparative purposes, but the reader are advised that these percentages are highly variable.

## RESULTS

Of the 658 people approached, 40 (6%) declined to fill in the questionnaire. The reasons stated were as follows: 2 did not have time, 3 felt too ill, 4 could not write (due to stroke, Parkinson's disease and

hand injuries) and 11 left their reading glasses at home. Of the other 20 people, 3 stated that they did not drink, 1 felt that the questionnaire was not relevant to him, 1 wanted the questionnaire in Afrikaans, 1 wrote that he felt uncomfortable, 1 wrote that it was too personal and 14 gave no reasons.

Table I: Age of males scoring 8 or more on the AUDIT

Age group	18-25	26-35	36-55	71-86
Frequency	30	29	14	1
Percentage	34,5%	28,2%	14,1%	1,4%
Total in age group	87	103	99	70

Of the 618 patients surveyed, 42% were female and 58% were male. 58% indicated that they were white, 18% coloured, 7% black, 2% Indian and 14% declined to reveal their race. Of this 14%, 10 (1,6%) stated that their home language were African (Xhosa, Zulu, Tswana, S/Sotho), 49 (7,9%) Afrikaans, 26 (4,2%) English and 4 (0,6%) Afrikaans and English. The majority of the sample's home language was Afrikaans (54,7%) followed by English (33,5%), Afrikaans and English (3,4%), Xhosa (3,4%), Zulu (1,5%), Tswana (1,5%), S/Sotho (1,4%), Tsonga (0,5%), Ndebele (0,2%), N/Sotho (0,2%) and Tsonga/Swazi (0,2%).

The group consisted of 44% current defence force members, 25% retired defence force members (85% white, 6% coloured, 9% race unknown), 22% medical dependents (95% female) and 7% civilians.

### AUDIT results

The overall rate of alcohol misuse according to the AUDIT questionnaire was 13,27%. Of the 536 people scoring below 8, 70 left out one or more questions. However, 38 of the 70 indicated that they never drink. Of the other 32, 15 could have scored 8 or more if they filled in all the questions. If that would have been the case, it would have brought the total up to 15,67%.

The average age of the 13,27% who scored 8 and higher was 29 years, compared to 43 years in the group scoring less than 8. Among male patients, 20,6% scored as misusers of alcohol, compared with 2,7% among

females. Of the retired defence force members (average age of 58), 5,2% scored positive compared to 24,2% of the current defence force members (average age of 29). Higher levels of alcohol misuse was found in lower age groups as demonstrated in Table I. All women scoring 8 or more on the

AUDIT-questionnaire were below the age of 46 years.

In the current defence force group, 69,2% (9 out of only 13) Indians scored as misusers compared to 32,5% (13/40) blacks, 25,0% (19/76) coloureds, 17,7% (17/96) whites and 16,7% (8/48) in the unknown race group.

Male current defence force members had a positive score of 28,9% (65/225). Wingfield being a naval base, mainly current naval defence force members were seen with 29,2% (52/178) males scoring as misusers of alcohol compared to 30,0% (9/30) male air force members. The numbers for the army and medical services were too small for comparative purposes. 38,1% (32/84) of male apprentices studying for electrical or mechanical fitters at SAS Wingfield Naval College scored as misusers of alcohol.

40,0% (24/60) of male current defence force members staying on the defence force base (average age of 26 years), scored as misusers of alcohol according to the AUDIT-questionnaire.

274 of the 618 people (44,3%) that took part in the study, stated that they never drink alcohol.

### Weekly alcohol consumption compared to the AUDIT questionnaire

In males scoring <8 on the AUDIT questionnaire, only 5 of the 266 that answered the question (1,9%) said that they consumed a number of units in excess of the limits set for low-risk drinking (>14 units per week). In females scoring <8 on the AUDIT

Table II: Derivation of sensitivity and specificity of weekly alcohol consumption compared to the AUDIT

AUDIT-questionnaire			
Weekly alcohol consumption	8 or more	Less than 8	Total
Positive	15	9	24
Negative	66	481	547
Total	81	490	571
Sensitivity = $15/81 = 18,5\%$			
Specificity = $481/490 = 98,2\%$			

questionnaire, only 4 of the 224 that answered the question (1,8%) said that they consumed >9 units per week.

Those whose AUDIT score was 8 or more, had a less impressive showing in comparison. All identified alcohol misusers answered this question, with 13 of 74 males (17,3%) and 2 of 7 females declaring an intake above the limit.

When compared to the AUDIT, self-reported alcohol consumption per week had a sensitivity of only 18,5% and a specificity of 98,2% (Table II). When compared to self-reported alcohol consumption per week, the AUDIT questionnaire had a sensitivity of 62,5% and a specificity of 87,9%.

#### Maximum number of drinks per occasion compared to the AUDIT questionnaire

In males scoring <8 on the AUDIT, 54 out of 234 (23,1%) who filled in this question stated that the maximum number of drinks that they drank per occasion was greater than 4. Of these 54 patients 7 indicated that their maximum was greater than 12 drinks.

In females scoring <8, only 22 out of 233 who filled in the question (9,4%) stated that the maximum number of drinks that they drank per occasion was greater than 3.

In males whose AUDIT-score was  $\geq 8$ , 63 out of 74 (85,1%) stated that their maximum number of drinks per occasion was more than 4. All alcohol misusers filled in this question (male and female). In females whose AUDIT-score was  $\geq 8$ , 7 out of 7 (100%) stated that their maximum number of drinks per occasion was more than 3.

When compared to the AUDIT, self-reported maximum number of drinks per occasion had a sensitivity of 86,4% and a specificity of 84,9% (Table III). When compared to self-reported maximum number of drinks per occasion, the AUDIT had a sensitivity of 47,9% and a specificity of 97,5%.

## DISCUSSION

### Limitations of study

The data was obtained during 3 weeks in the middle of the year which coincided with the school holidays.

However, it was not expected that this would lead to an unrepresentative peak in the results. The AUDIT-questionnaire also specifically refers to alcohol experiences in the past year.

Six percent of patients approached declined to participate in the study. This compares well with the study of Isaacson *et al.*<sup>9</sup> where 12% declined to participate as well as the study of Sharkey *et al.*<sup>6</sup> where 9% of outpatients declined. These were the only studies found where the AUDIT-questionnaire was used in similar settings. Only 20 of the 40 patients did not have a valid reason for not participating and 3 of these said that they did not drink. If all of the 17 patients were regarded as misusers of alcohol, the overall rate of alcohol misuse would then be 15,6% (99/635) which is only slightly higher than what was found.

The questionnaire was handed out for self-completion and therefore it can be expected that some questionnaires would not have been completed in full. Fortunately most patients that left questions on the AUDIT unanswered, did so because of the fact that they were teetotalers and therefore felt that the questions were not applicable to them.

To try and prevent patients from not completing the questionnaire honestly, it was decided on an anonymous questionnaire. The questions were obviously of a very personal nature and it is to be expected that some patients would be inclined to minimise their alcohol consumption habits, which could lead to an under-estimation of the prevalence. However, the aim of the study was explained on the questionnaire as well as by the research assistant, and the subjects were assured of complete confidentiality.

### Notable results

The greatest influences on the rate of alcohol misuse found were **age** and **gender**. There is by far a greater level of alcohol misuse among males and younger age groups. 28,9% of male current defence force members scored as misusers of alcohol on the AUDIT. Our suspicion was confirmed by finding a high level of misuse (38,1%) under male apprentices studying at the technical college on the base. 40% of male defence force members staying on

Table III: Derivation of sensitivity and specificity of maximum number of drinks per occasion compared to the AUDIT

AUDIT-questionnaire			
Maximum number of drinks per occasion	8 or more	Less than 8	Total
Positive	70	76	146
Negative	11	427	438
Total	81	503	584
Sensitivity = $70/81 = 86,4\%$			
Specificity = $427/503 = 84,9\%$			

the base also scored as misusers according to the AUDIT-questionnaire.

Even though low threshold levels were taken, self-reported alcohol consumption per week had a sensitivity of only 18,5% compared to the AUDIT-questionnaire confirming what we already know namely that direct questions about alcohol consumption are less sensitive than screening questionnaires in detecting alcohol misuse. It is however interesting to see that self-reported maximum number of drinks per occasion had a much higher sensitivity, namely that of 86,4%, compared to the AUDIT even though these thresholds were arbitrarily chosen based on tradition rather than empirical study.

When compared to self-reported alcohol consumption per week, the AUDIT-questionnaire had a sensitivity of 62,5% and thus missed 9 patients who had an increased risk for adverse health events according to current evidence on at-risk drinking.

When compared to self-reported maximum number of drinks per occasion, the AUDIT-questionnaire had a sensitivity of 47,9% and so missed 76 patients who misuses alcohol according to threshold levels set by the National Institute of Alcohol Abuse and Alcoholism (USA).

If both these numbers were included, the overall rate of alcohol misuse detected by the AUDIT-questionnaire combined with these two direct consumption questions is then 26,05% (161/618).

### Comparative studies

In the USA, about 11% to 20% of patients presenting to general medical clinics are diagnosed as suffering from alcohol abuse or dependence.<sup>30</sup> This is comparable to the 13,27% of alcohol misuse according to the AUDIT-questionnaire that was found in this group, and the 26% through the combined methodology.

Only one study was found that has used the AUDIT questionnaire to determine the extent of alcohol misuse in those attending a general medical clinic. Isaacson *et al.* used the AUDIT-questionnaire among those attending a general medical clinic in inner city

Detroit, USA. The rate of alcohol misuse was higher, with 21% (26/124) identified. The average age of the sample was 45 years with 52% women. However, the patients were of low socio-economic status and predominantly of African American origin.

One other comparable study was found which looked at the pattern of alcohol consumption of a general hospital population in north Belfast, Ireland (Sharkey *et al.*, 1996)<sup>6</sup>. 15% of outpatients scored as misusers of alcohol according to the AUDIT questionnaire of which 76%, however were female. Among male patients, 27% scored as misusers, compared with 10% among females which is higher than the 20,6% and the 2,7% found in males and females in our study group. The average age was 45 which is slightly higher than the average age of 41 in this study group.

In South Africa high levels of alcohol dependence according to the CAGE questionnaire were found in very selected groups: 87% in coloured farm workers in the Koue Bokkeveld<sup>38</sup>, 56% in a coloured rural community in Fraserburg 500 km from Cape Town<sup>39</sup>, 62% in hospitalised coloured TB patients<sup>40</sup>, 31% in hospitalised black TB patients<sup>40</sup> and 32% in black miners in Welkom<sup>41</sup>. 2 studies were conducted that targeted the adult population in the Cape Peninsula, but again only the coloured and black groups. Here, Gilles *et al.* (1973) found a prevalence of 19,6% (male) and 1,2% (female) of alcohol misuse under the general coloured population of the Cape Peninsula and Lombard and Steyn (1991) found a prevalence of 26,7% (male) and 5% (female) of alcohol misuse ( $\geq 5$  drinks per day or communally on weekends) under the black population of the Cape Peninsula.<sup>1</sup> With the new national defence force being more representative of all the race groups and the retired defence force group consisting mainly of white patients, the average age of black and coloured patients in this study were much younger (26 years and 31 years respectively). Therefore you would expect to find a higher rate of alcohol misuse in this study compared to the general population as was the case: 32,4% of black males and 12,5%

(1 out of only 8) black females scored as misusers of alcohol. 24,7% of coloured males and 2,8% of coloured females scored as misusers according to the AUDIT-questionnaire.

On average, alcohol consumption rates in South Africa appear to be 15-20% higher for men than for women in all ethnic groups.<sup>1</sup> This study also found a substantial difference in rates of alcohol misuse according to the AUDIT-questionnaire between men (20,6%) and women (2,7%).

Two studies over 10 years ago (Rocha-Silva 1989, 1991) compared differences among race groups in the general population of South Africa and found the highest level of risky drinking among blacks, followed by coloureds, Indians and whites. A fairly substantial 13% difference between white and black males was noted in the 1985 study (Rocha-Silva 1989).<sup>1</sup> The same trend was found in this study according to the AUDIT except for the Indian group which consisted of only 15 patients in total and the high prevalence of alcohol misuse found here (60,0%, 9/15), may thus be due to random error. A difference of 15% was found between black and white current defence force members where the average age were comparable.

### CONCLUSION

In this group of patients attending a defence force general medical clinic the overall rate of alcohol misuse according to the AUDIT-questionnaire was not found to be higher than what was found in other studies in South Africa as well as in other countries. However, a 13% rate of alcohol misuse according to the AUDIT-questionnaire is still need for concern and with much higher levels of misuse found in certain subgroups, it is even more distressing.

With current threshold levels of consumption for hazardous drinking set lower than what was originally defined with the development of the AUDIT, it is recommended that the two direct questions on consumption determining average number of drinks per week as well as maximum number of drinks per occasion be added to the AUDIT-questionnaire for routine screening for

at-risk drinking. If findings from these two consumption questions were included in this study, the overall rate of alcohol misuse found was 26,05%.

With brief intervention having been shown as a low cost, effective preventive measure for heavy drinking in primary care settings, the implementation of intervention strategies should be considered in general medical clinics in the defence force and elsewhere. □

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